Problem D. Distance Sum

Time limit: 4 seconds

You are given a connected undirected unweighted graph. The distance $d(u, v)$ between two vertices u and v is defined as the number of edges in the shortest path between them. Find the sum of $d(u, v)$ over all unordered pairs (u, v).

Input

The first line of the input contains two integers n and m ($2 \le n \le 10^5$; $n-1 \le m \le n+42$) — the number of vertices and the number of edges in the graph respectively. The vertices are numbered from 1 to n.

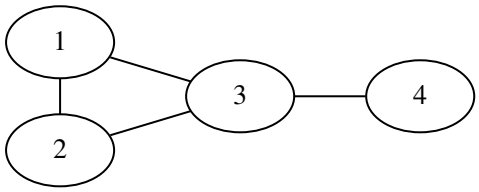
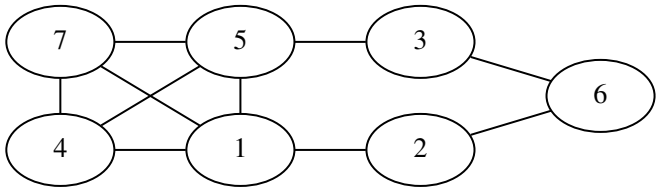
Each of the following m lines contains two integers x_i and y_i ($1 \le x_i, y_i \le n$; $x_i \ne y_i$) — the endpoints of the i-th edge.

There is at most one edge between every pair of vertices.

Output

Output a single integer — the sum of the distances between all unordered pairs of vertices in the graph.

Examples

standard input	standard output	Illustration
4 4 1 2 2 3 3 1 3 4	8	
7 10 1 2 2 6 5 3 5 4 5 7 3 6 1 7 5 1 7 4 4 1	34	

Note

In the first example the distance between four pairs of vertices connected by an edge is equal to 1 and $d(1, 4) = d(2, 4) = 2$.